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DEFENSE INDUSTRY PROFIT REVIEW: VOLUME I

Logistics Management Institute  
Washington, D.C.

November 1967

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DEFENSE INDUSTRY PROFIT REVIEW

LMI Task 66-25

Volume One

November, 1967

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4900 Massachusetts Avenue, N.W.  
Washington, D. C. 20016

DEFENSE INDUSTRY PROFIT REVIEW

LMI Task 66-25

Volume One

November, 1967

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## FOREWORD

This initial report is based upon a study which is being performed at the request of the Department of Defense to develop a method for providing the DoD with visibility over realized profits of defense contractors. The study endeavors to measure profit trends by size of company and type of contract and to compare trends on both defense and commercial business.

The study method is dependent upon the voluntary cooperation of individual companies in full disclosure of sales, capital, and earnings data. The data submitted are extremely sensitive to the individual companies and must be treated as proprietary. Hence in this report they are consolidated and presented in the form of averages, ranges, standard deviations, and confidence intervals.

In addition to individual companies, other data sources consulted included the Department of Defense, the Department of Commerce, the Federal Trade Commission, the Securities & Exchange Commission, the Federal Reserve Board, the Renegotiation Board, defense industry associations, and the National Industrial Conference Board.

This document, Volume One, concentrates primarily on findings and conclusions resulting from the study. Volume Two, which is a supplement to this document, contains supporting data.

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## INTRODUCTION

### A. TASK DEFINITION

On 7 June 1966, the Assistant Secretary of Defense (Installations and Logistics) assigned a task to the Logistics Management Institute which involved a study, "Defense Industry Profit Review System." This report is a product of that task. It deals with the initial results of a voluntary defense industry profit data study which included the following:

- Develop the basic profit data requirements and instructions for defense industry participation in a voluntary profit data study.
- Identify a representative sample of the defense industry for participation in this study.
- Conduct interviews with companies selected for the sample for the purpose of assisting them in the preparation of profit information to be included in this study.
- Obtain the profit data from industry, and after analysis, consolidate the results in terms of (a) profit as a percent of sales, of equity capital investment, and of total capital investment for both defense and commercial (non-government) business; (b) unallowable/non-recoverable costs<sup>1</sup> as a percent of defense sales; and (c) profit as a percent of defense sales on different types of contracts, including prime contracts, subcontracts and price competitive contracts.

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<sup>1</sup>See paragraph 7, Appendix A-3 for a definition of unallowable/nonrecoverable costs.

- Develop as much useful information as necessary in discussion with companies to determine the reasons for their realized profits or losses.

The Profit Review Study task order had one additional purpose, namely, an analysis by LMI of the data outputs of a DoD internal profit review system. The DoD system covers contracts negotiated under the weighted guidelines and is based on contracting officers' reports of "going-in" profit objectives and negotiated profits on all types of contracts and earned profits on completed contracts of all types except firm fixed-price. Some of the data from the DoD Profit Review System are included in this report, but the data on those completed contracts that were negotiated under the Weighted Guidelines profit policy were not sufficient in quantity for a meaningful analysis. It is believed that additional data will be available for inclusion when the next LMI Profit Review report is released.

For the purpose of this study, "defense industry" is a segment of U.S. industry made up of companies that are doing over ten percent of their total business and over \$1 million in sales annually with the Department of Defense.

In addition to the work called for in the task, LMI also obtained and analyzed defense industry views on what they thought profits in the defense industry should be and what changes, if any, they believed should be made in DoD or industry's policies or practices to make realized defense profits more compatible with what the industry people thought they should be.

#### B. BACKGROUND

For the development and production of weapon systems and other military hardware, the United States Government looks primarily to our privately owned, profit-oriented industry.<sup>1</sup> The

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<sup>1</sup>Many of the broad policy aspects of this matter are discussed in "Report to the President on Government Contracting for Research and Development." 30 April 1962.

success of such an arrangement depends upon many things which are beyond the scope of this study, such as a high order of planning skill and managerial capability within both the Government and industry. One of the ingredients for success is industry profit, and it is upon that single ingredient which this study focuses.

The Department of Defense must apply contracting policies and methods designed to create an environment in which industry can realize profits on defense business which are high enough to give reasonable assurance of long-term availability to DoD of industrial support by the best companies, and to enable those defense contractors to attract sufficient equity and borrowed capital. The Department of Defense must also be concerned that profits are not so high that use of public funds becomes a concern. Just where the profit range on defense business should fall in quantitative terms is a matter of judgment and a point on which there will probably always be disagreement. This report makes no recommendation as to what profit ranges should be. However, although there are several right answers depending upon one's point of view, there is general agreement that profit opportunities must be sufficient to provide long-term health and vigor to those companies which turn in the kind of performance DoD requires to support its mission.

Beginning in the early 1960's the Department of Defense made a number of changes in its procurement and contracting policies which directly or indirectly influenced the profitability of defense business. On balance, these changes significantly increased contractors' risks. Some of these changes are:

- The Department of Defense implemented a policy of decreasing cost-reimbursable contracting, increasing incentive and firm fixed-price contracting, and increasing price competitive procurement.

- The shift from cost-reimbursable to fixed-price contracting increased the working capital requirements of

contractors primarily because the progress payments by DoD on the fixed-price types were at a lower rate than reimbursements by DoD on the cost type contracts.

- The DoD strengthened its resistance to requests for government-furnished facilities, which required more facilities to be provided by the contractors and consequently increased contractors' capital requirements.

- The DoD gave increased emphasis to its breakout program (ASPR 1-326, October 1965) whose effect was to increase the proportion of government-furnished material and, therefore, to decrease the ratio of sales to capital.

- The Department of Defense developed the Contractor Performance Evaluation System,<sup>1</sup> which when fully implemented is intended to improve the ability of the DoD to reward efficient defense contractors both in source selection and in the establishment of target profits.

During the same period the annual reports of the Renegotiation Board indicated a decline in average defense industry pre-tax profit on sales from 6.5% in 1956 to 3.1% in 1962. Hearings before the Senate Government Operations Committee (McClellan Committee) underscored the fact that uncritical application of standard average percentages to total cost or sales dollars without consideration of individual performance is not a sound way to arrive at target profit. Studies by the DoD showed that negotiated profit percentages clustered within narrow ranges by type contract.

On 15 August 1963 the Department of Defense promulgated a new profit policy for application to all contracts negotiated subsequent to 1 January 1964. That policy, which appears in

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<sup>1</sup>See Guide to Contractor Performance Evaluation (Development and Production) June, 1966 issued under authority of DoD Directive 5126.38, dated 3 December 1965.

Paragraph 3-808 of the Armed Services Procurement Regulation (ASPR) includes the following statement:

" . . . Effective national defense in a free enterprise economy requires that the best industrial capabilities be attracted to defense contracts. These capabilities will be driven away from the defense market if defense contracts are characterized by low profit opportunities. Consequently, negotiations aimed merely at reducing prices by reducing profits, with no realization of the function of profit cannot be condoned. . . ."

The Department of Defense initiated a data collection system (the DoD Profit Review System) to maintain continued surveillance over the implementation of its profit policy.<sup>1</sup> Detailed implementation guidelines and DoD courses of instruction for departmental contracting personnel were instituted and have been given regularly in the interest of providing informed and consistent policy implementation.

A significant time lag occurs between implementation of DoD policies that might affect profit and the resultant effect on profit realized by defense contractors. Considerable time was required for contracts to be awarded under ASPR 3-808, as well as additional time for those contracts to have an impact and become recorded revenue on contractors' books of account.<sup>2</sup>

Inasmuch as the policy is only applicable to negotiated target profit or "going in" profit, Defense management believed it desirable to develop a better understanding of realized or "coming out" defense industry profit. It was recognized that "going in" target profit is only an indication of the potential

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<sup>1</sup>ASPR 3-808.1.

<sup>2</sup>For example, average expenditures are about 20% within 11 months, 50% within 16 months, and 80% within 20 months after contract award. See Section XII for discussion of time lag between DoD procurement awards, expenditures, and industry realization of profit.

level of industry's profitability. Also, neither the profit policy nor the DoD reporting system was applicable to price competitive contracts upon which an ever increasing share of the DoD procurement budget was being spent. To help shed light on both areas - i.e., realized profits in general and profit on price competitive contracts in particular - the Logistics Management Institute was asked to undertake a study effort in which realized defense industry profit would be obtained on a voluntary basis from a sampling of defense industry. That became the task upon which this report is based.

It was intended that the LMI study would (1) make available for the first time an array of data on defense profit sufficiently comprehensive and reliable to permit meaningful analysis; and (2) aid in an understanding and evaluation of the various factors influencing the profitability of defense business including, in particular, the impact of DoD procurement policies and contracting systems and methods.

#### C. TASK PLAN AND APPROACH

A plan was prepared for obtaining industry financial data over a period of recent years.

A form covering the type of financial information desired was developed.<sup>1</sup> Analysis was then undertaken to define a sample of defense contractors that would be representative of defense industry, including subcontractors as well as primes.

Concurrently, an analysis was made and general (primarily non-defense) industry data were selected, to which the defense industry data could be compared. Many industry financial data were considered, in addition to considering the possibility of collecting and structuring comparative data specifically for

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<sup>1</sup>The form appears in Appendix A.

the study. It was finally decided to use the six durable goods categories from the FTC/SEC Quarterly Financial Report for Manufacturing Companies<sup>1</sup> whose products most closely compared to those purchased by the DoD.

Initially, six defense contractors volunteered to submit data in order to enable LMI to test the workability of the data gathering and analysis plans. Upon receipt and consolidation of those data, the planned approach was again reviewed in detail and approved by defense management upon the recommendation of the Defense Industry Advisory Council (DIAC) at its February 1966 meeting. A DIAC subcommittee chaired by the Assistant Secretary of Defense (Installations and Logistics) was formed at the February meeting to maintain surveillance over the study. Subsequent to the meeting, in accordance with the Federal Reports Act,<sup>2</sup> the approval of the Bureau of the Budget was obtained for submitting the designed questionnaire to designated additional contractors.<sup>3</sup>

It was decided initially to obtain data from about 60 companies, with the intent of selecting 20 companies, each doing over \$200 million per year in defense sales - prime and sub; 20 each between \$25 million and \$200 million per year - prime and sub; and 20 each between \$1 million and \$25 million per year - prime and sub. Participation was voluntary. The decision regarding the number of companies from which data would be obtained was an arbitrary one, with the considerations including an LMI workload of manageable proportions and reasonable demands upon defense industry.

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<sup>1</sup>See Section IX for discussion of selection and use of the FTC/SEC durable goods categories.

<sup>2</sup>U.S. Code - Title 15, Section 139(C), Bureau of Budget Circulars Nos. A-40 and A-17.

<sup>3</sup>See Appendix A for format used.



In order to obtain the desired level of industry participation it was necessary to request the participation of about 110 companies. Because of lack of data in the form required, or inability to meet the time requirements, a number of companies - particularly smaller companies - were unable to participate. Almost all high volume (over \$200 million) defense contractors were invited to participate. Invitations were extended to 28 medium volume contractors (\$25 million-\$200 million) and 53 low volume contractors. In the end, some 65 contractors participated in the study.

Financial information was obtained for the years 1958 to 1966, inclusive (data for fiscal years ended during the particular calendar year involved). All profit data were pre-tax. LMI developed some after tax data as indicated in Section I.

LMI tested a significant portion of the data by comparison with published financial reports and by other means to assure their reliability for use in the study. Also, in all cases, the data were requested and discussions and follow-up were accomplished through direct contact with top management of the participating companies. Generally such discussions were with the presidents and chief financial officers.

The company data were consolidated in the form of average profit rates for defense and commercial business, for companies in various sales volume ranges, and for different types of contracts. Since averages conceal variations in individual company experience, the variation about the average was also analyzed.

The data were presented in consolidated form to the DIAC at its October 1966 meeting. As a result of the October presentation, it was recommended by Defense management and the

DIAC that the data collection time period be extended to encompass 1966 and 1967.

To find out what defense contractors thought about the causes of the levels, trends, and differences in defense profit as well as the differences between profit on defense business and profit on commercial business, extensive interviews with contractor management were conducted. These interviews also covered identification of problem areas together with discussions of their potential solutions.

D. PRESENTATION OF RATIOS:  
"SALES" VS. "COST" BASIS; "BEFORE TAX" VS. "AFTER TAX" BASIS

Generally the operating ratios throughout this report are percentages of sales, rather than percentages of costs. The sales basis was chosen as being the common method of reflecting percentages throughout industry and the financial market. If it is desired to compare profit on sales with DoD procurement statistics which reflect profit on costs (e.g., Section IV), the profit/cost ratio may be readily derived from the ratio of profit to sales by means of the following formula:

$$\frac{\text{Profit}}{\text{Cost}} = \frac{\text{Profit}}{\text{Sales}} \div \left( 1 - \frac{\text{Profit}}{\text{Sales}} \right)$$

For example, if the profit on sales is 8%:

$$\frac{\text{Profit}}{\text{Cost}} = .08 / (1 - .08) = .087 = 8.7\%$$

After considering the pros and cons of stating profit before or after federal income taxes the decision was made to show the ratios generally before tax. This method was chosen to make it possible to relate the ratios to price negotiation policy and to other DoD and industry statistics, and also to avoid distortions that would result from the rates of tax which vary among the companies and from year to year. However, since the after tax percentage is the valid measure of net

business profitability, after tax ratios are presented in summary form in Section I (paragraph A and Charts I-1 and I-2). For obvious reasons, after tax profits were also used in making the capital market analysis in Section VI. The reader should bear in mind that the before tax ratios used in all other portions of the report are subject to reductions, (averaging in 1966 approximately 42%<sup>1</sup>) if the data are used to measure true business income.

E. ORGANIZATION OF THE REPORT

Results of the study to date are presented in this volume (sections I through VIII) in the form of findings, conclusions and supporting evidence, avoiding any presentation that would disclose individual company information. Volume Two (sections IX through XIII) includes the procedure followed for sample selection and data collection, a summary of the statistical approach, and comparative data from outside commercial sources. Sample forms are provided in the Appendices in Volume Two.

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<sup>1</sup>The average income tax as a percentage of pre-tax profits in the six durable goods industry groups, as shown in the FTC-SEC Quarterly Financial Report of Manufacturing Companies for 1966.

## SECTION I

### SUMMARY FINDINGS

#### A. COMPARISON OF PROFIT ON DEFENSE BUSINESS WITH PROFIT ON COMMERCIAL BUSINESS

(Note: The profit rates used in this Paragraph A are net profits after deduction of Federal income taxes. In other sections, and in related comments in other paragraphs of this section, profit rates and costs are stated before tax. See Paragraph D of the Introduction for a discussion of the use of before and after tax ratios.)

1. The average profit as a percent of capital investment, of high and medium volume companies,<sup>1</sup> has been lower for the past five years on their defense business than on their commercial business and also lower than the average profit on capital of companies included in the FTC-SEC<sup>2</sup> sample. The trend of profits on defense business of these companies since 1958 has been downward while that on their commercial business and the FTC-SEC sample has been upward. (Chart I-1.)

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<sup>1</sup>These findings are based on weighted averages of the high and medium-volume (over \$25 million defense sales per year) companies in the sample. Experience of low-volume companies is not shown. The variance of results for the low-volume company sample was greater than for the high and medium-volume sample, and the low-volume sample contained a very small portion of the total sales of all low-volume companies. Inclusion of the data from the low-volume companies would, therefore, widen the confidence interval and hence lower the usefulness of the overall data. Data on the low volume companies will be found in Volume Two.

<sup>2</sup>See Paragraph D, Section IX for definition of the FTC-SEC sample.

- Net Profit on Total Capital Investment (TCI) was 6.9% on defense business in 1966. The corresponding ratio for defense contractors' commercial business was 10.8% and for companies in the FTC-SEC sample, 12.4%.

- Between 1958 and 1966 defense profit/TCI ranged from a high of 10.2% in 1958 to a low of 6.3% in 1964 and stood at 6.9% in 1966.

- Profit to TCI on the commercial business of defense contractors ranged from a low of 4.7% in 1961 to a high of 11.6% in 1965 and stood at 10.8% in 1966.

- Profit to TCI of the comparable FTC-SEC industry groups ranged from a low of 7.1% in 1958 to a high of 12.6% in 1965 and stood at 12.4% in 1966.

2. Defense TCI turnover (the ratio of sales to TCI) declined from 3.8 in 1958 to 2.9 in 1966. Over the same period the TCI turnover of both the commercial business of defense contractors and the FTC-SEC companies ranged from 2.0 in 1958 to 2.2 in 1966. (Table II-3.)

3. Over the same period the defense business ratio of profit to sales declined from 2.7% in 1958 to 2.4% in 1966. In contrast, both the commercial business of defense firms and the FTC-SEC companies showed increases in profit on sales; the first group from 3.4% in 1958 to 5.0% in 1966 and the second group from 3.6% in 1958 to 5.5% in 1966. Chart I-2.)

4. The decline in defense profits on TCI was caused primarily by the decline in TCI turnover and to a lesser degree by a decline in profits on sales, which held a fairly level ratio from 1960 forward. However, the fact that commercial and FTC-SEC turnover and profits on sales increased steadily during the same

period has resulted in a widening of the gap between defense profits and commercial profits on TCI.

5. The non-defense portion of defense industry business has been expanding at a slightly faster rate than has commercial business in general. The defense portion of defense industry business, therefore, has been declining as a percentage of their overall business (Table III-1.)

6. Discussions with defense contractors revealed that most of them planned to increase their commercial business as a percent of their total business. They intend to change their commercial/defense business mix primarily by concentrating growth efforts on non-defense business. Their reasons are that:

a. The non-defense sector of the economy is growing more rapidly than the defense sector and they believe it will continue to do so.

b. During the past few years financial risk has shifted significantly from the Government to contractors in defense business.

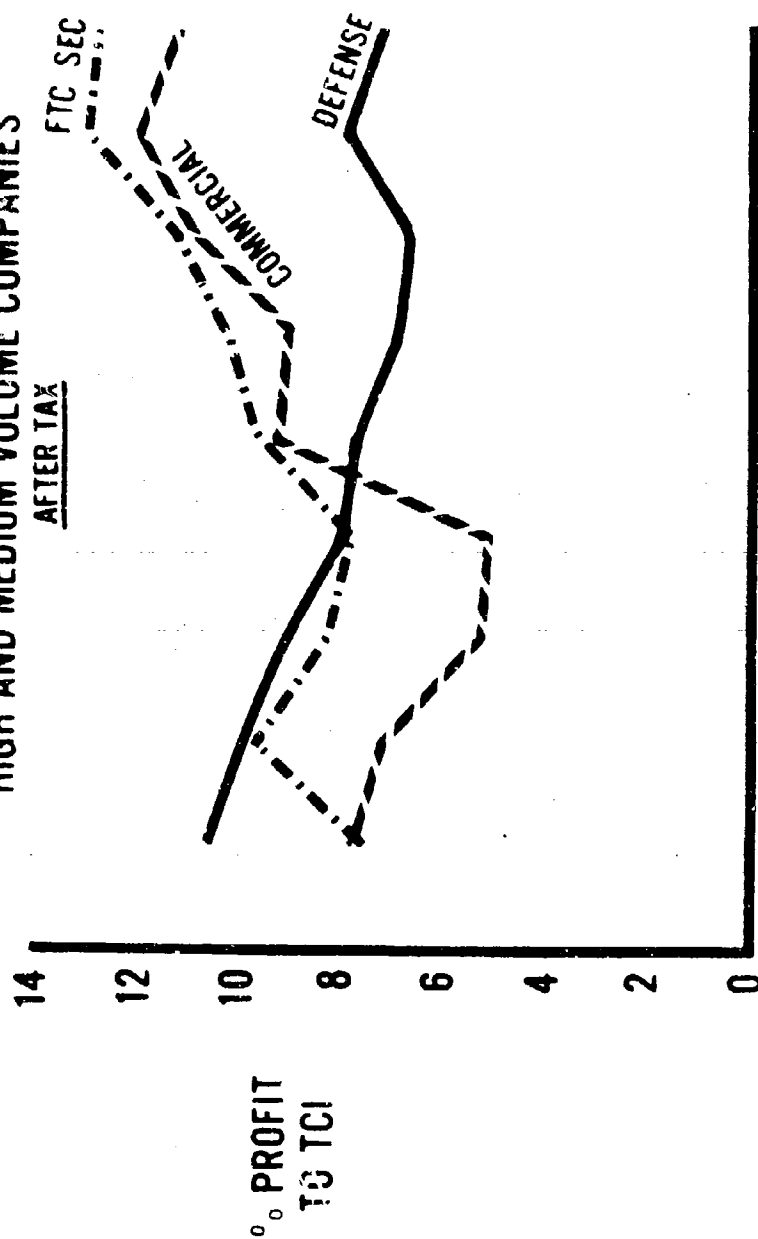
c. There is greater profit potential in commercial business.

d. Commercial business is generally less competitive and has more production stability than defense business.

(Reference: Section VII.)

CHART I-1

# **% PROFIT TO TOTAL CAPITAL INVESTMENT** **HIGH AND MEDIUM VOLUME COMPANIES**

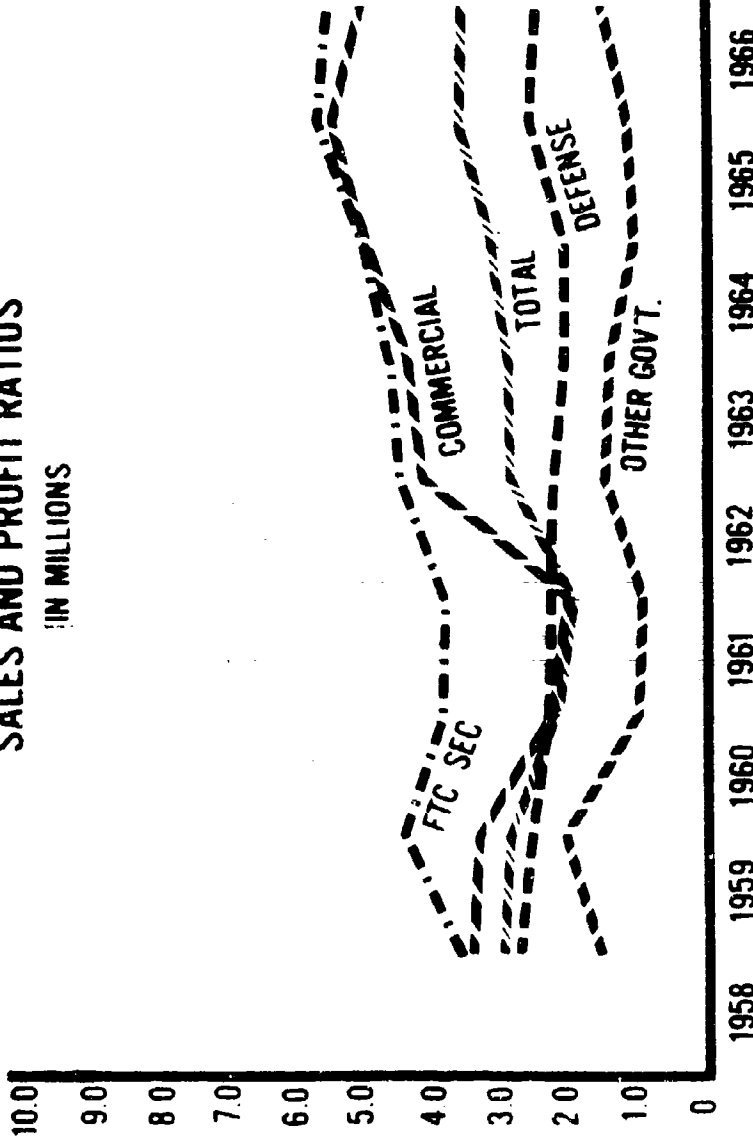


	1958	1959	1960	1961	1962	1963	1964	1965	1966
<b>DEFENSE</b>									
% PROFIT TO TCI	10.2	9.5	8.7	7.5	7.4	6.5	6.3	7.6	6.9
<b>COMMERCIAL</b>									
% PROFIT TO TCI	7.3	6.8	4.8	4.7	9.0	8.7	10.6	11.6	10.8
<b>FTC/SEC</b>									
% PROFIT TO TCI	7.1	9.3	7.8	7.4	9.3	9.8	10.8	12.6	12.4

CHART 1-2

# SALES AND PROFIT RATIOS

IN MILLIONS



AFTER TAX

% PROFIT  
TO SALES

	1958	1959	1960	1961	1962	1963	1964	1965	1966
TOTAL SALES	19,124	20,791	22,042	23,045	25,080	25,705	26,446	28,000	32,339
% PROFIT TO SALES	2.9	2.8	2.2	2.1	2.8	2.8	3.1	3.6	3.5
DEFENSE SALES	12,706	13,372	13,281	14,212	15,380	14,882	13,500	12,759	14,738
% PROFIT TO SALES	2.7	2.5	2.3	2.2	2.2	2.0	2.1	2.6	2.4
OTHER GOV'T. SALES	374	448	568	718	1,249	2,320	3,239	3,906	4,064
% PROFIT TO SALES	1.5	2.1	1.0	0.9	1.5	1.4	1.1	1.2	1.6
COMMERCIAL SALES	6,044	6,971	8,193	8,116	8,452	8,504	9,707	11,334	13,537
% PROFIT TO SALES	3.4	3.3	2.2	2.0	4.1	4.3	5.0	5.5	5.0
FTC SEC	107,579	121,387	126,982	128,897	145,064	155,038	167,032	191,539	220,062
% PROFIT TO SALES	3.6	4.4	3.8	3.8	4.5	4.6	5.0	5.7	5.5



## B. ANALYSIS OF DEFENSE PROFITS

(Note: The profit rates used in this Paragraph B are stated before deduction of Federal Income Tax so that the percentages can be conveniently related to the basic data and to rates used in price negotiations.)

1. Equity Capital Investment (ECI) in defense business increased by 38% from \$2,671 million in 1958 to \$3,684 million in 1966. TCI increased by 50% from \$3,267 million to \$4,911 million during the same period, \$788 million of the increase occurring in 1966. (Table II-3.)
2. Defense sales volume during the 1958-1966 period ranged from a low of \$12,706 million in 1958 to a high of \$15,380 million in 1962, and was \$14,738 million in 1966. (Table II-3.)
3. The substantial increase in the requirement for capital in the defense portion of the business coupled with only a moderate growth in sales volume resulted in a 30% increase in capital per dollar of defense sales. The ratio of profit per dollar of sales would have had to increase a similar 30% to maintain a profit to total capital ratio constant at the 1958 level. The contrast of the trend in the capital/sales ratio and the profit/sales trend and the resulting decrease in profit/TCI are illustrated in Chart I-3.
4. Defense sales/ECI and defense sales/TCI ratios vary widely among contractors, as does the ratio of long-term debt to ECI. Some defense contractors have virtually no borrowed capital while others have relatively large amounts as a percentage of total capital. Therefore, the profit/capital ratios are more comparable when expressed on the basis of profit to TCI. Chart I-4 shows a distribution of the defense total capital

turnover ratios. The wide variation in these ratios has contributed to wide variations among contractors in their ratios of profit to total capital.

5. The trend of the defense profit/sales ratio was downward from 1958 through 1964. The ratio of 4.8% for 1965 was up sharply from the 4.0% for 1964, but fell to 4.5% in 1966. This ratio is equivalent to the 1960 ratio of 4.5% but is lower than 1958 and 1959 which were 5.4% and 5.1% respectively. (Table III-1.)

6. The profit/sales ratio of firm-fixed-price (FFP) contracts has been lower since 1961 than the same ratio on all other contract types. The ratio on CPFF contracts has risen slightly, which may be due to restricting use of this type of contract to high technical effort. Profits on sales on CPIF and FPI contracts have remained about the same during the period. (Table III-2.) In that part of the sample for which we had data, profits on price competitive sales trended downward from 11.0% in 1958 to an average loss of 4.2% in 1964, and stood at an average of 0.4% in 1966. The frequency distributions of profit ratios by contract type for 1966 are shown in Chart I-5. The low mean ratios on FFP and price competitive contracts are strongly affected by substantial losses on a small number (36<sup>1</sup> were identified) of large contracts. However, even if these 36 contracts are eliminated, as shown in Chart I-6, the adjusted mean ratio of 5.0% on FFP contracts is still lower than CPIF or FPI.

7. Unallowable and nonrecoverable costs have been averaging approximately 1.5% of defense sales, with a slight increase

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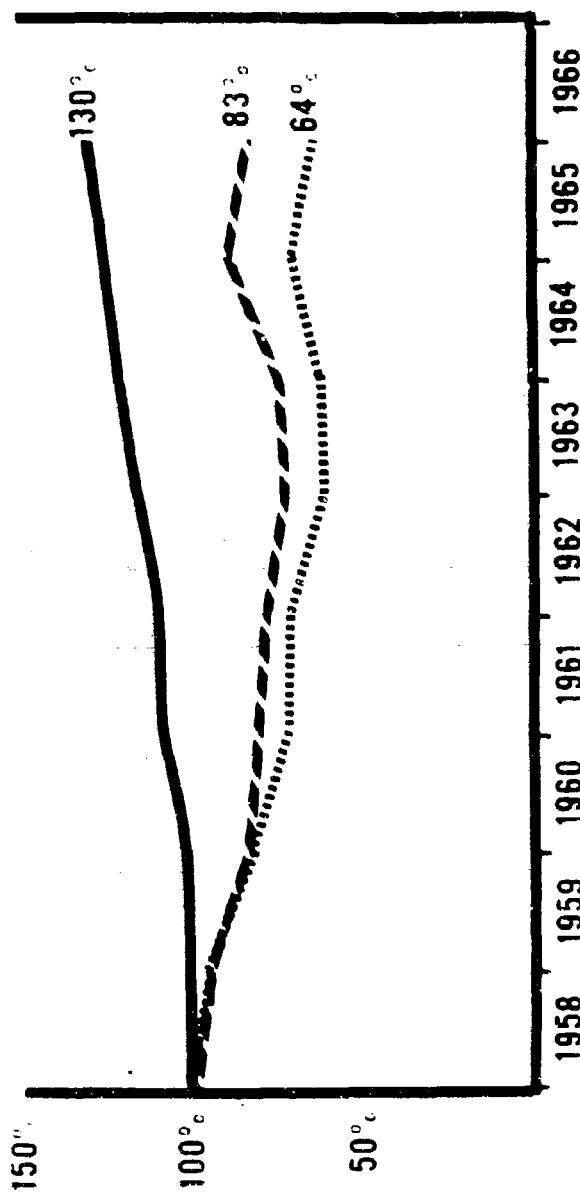
<sup>1</sup>In attempting to analyze FFP losses, LMI queried some of the contractors having such losses. These contractors mentioned the effect of one or a few large-loss contracts on their average FFP profits. The 36 contracts are some of those which were identified.

in 1965 and 1966. At a 1.5% rate they are equivalent to about 1/3 of the profit in defense business. The major elements of these costs are independent research and development and interest. (Tables V-1 thru V-3.) The range of unallowables among companies is from less than 1/2 of 1% to over 5%. Thus, any change in the treatment of these costs would not have uniform effect among defense contractors.

8. In discussions contractors stated that they believe adequate attention is given to the subject of contract risk and employment of higher skills in formulating prenegotiation profit objectives under the Weighted Guidelines. They believe, however, that greater emphasis should be placed on contractor capital investment, and that additional attention should be given to performance on earlier contracts in establishing profit objectives on new contracts. (Reference: Section VII.)

CHART 1-3

PERCENTAGE CHANGES IN  
 RATIO OF PROFIT (BEFORE TAX) TO TOTAL CAPITAL INVESTMENT  
 CAPITAL PER DOLLAR OF DEFENSE SALES  
 & PROFIT (BEFORE TAX) PER DOLLAR OF DEFENSE SALES  
 HIGH AND MEDIUM VOLUME COMPANIES

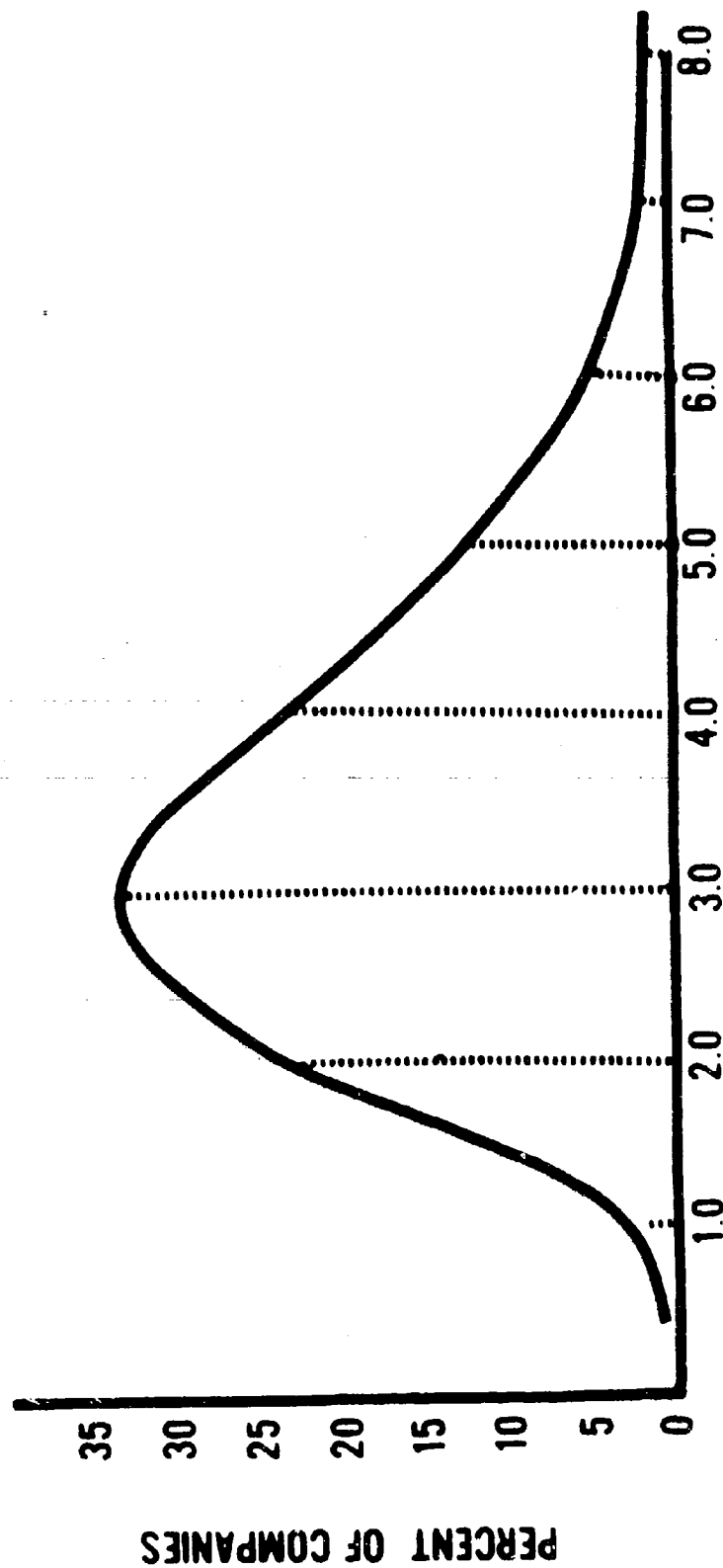


CAPITAL PER DOLLAR OF DEFENSE SALES INDEX (1958=100%)	1958	1959	1960	1961	1962	1963	1964	1965	1966
	257	260	257	278	280	297	310	322	334
PROFIT PER DOLLAR OF DEFENSE SALES INDEX (1958=100%)	054	051	045	043	042	039	040	048	045
	100	94	83	80	78	72	74	89	83
% DEFENSE PROFIT / TCI INDEX (1958=100%)	20.4	19.1	17.0	14.6	14.3	12.5	12.2	14.3	13.0
	100	94	83	72	70	62	60	70	64

# DISTRIBUTION OF DEFENSE TOTAL CAPITAL TURNOVER RATIOS

HIGH AND MEDIUM DEFENSE VOLUME COMPANIES

1966



20  
CHART I-4

DEFENSE SALES DEFENSE TOTAL CAPITAL INVESTMENT

DISTRIBUTIONS OF THE PROFIT TO SALES RATIO  
 BY TYPE OF CONTRACT SALES  
 HIGH AND MEDIUM VOLUME COMPANIES  
 MEAN, 68 & 90° RANGE

BEFORE TAX

1966

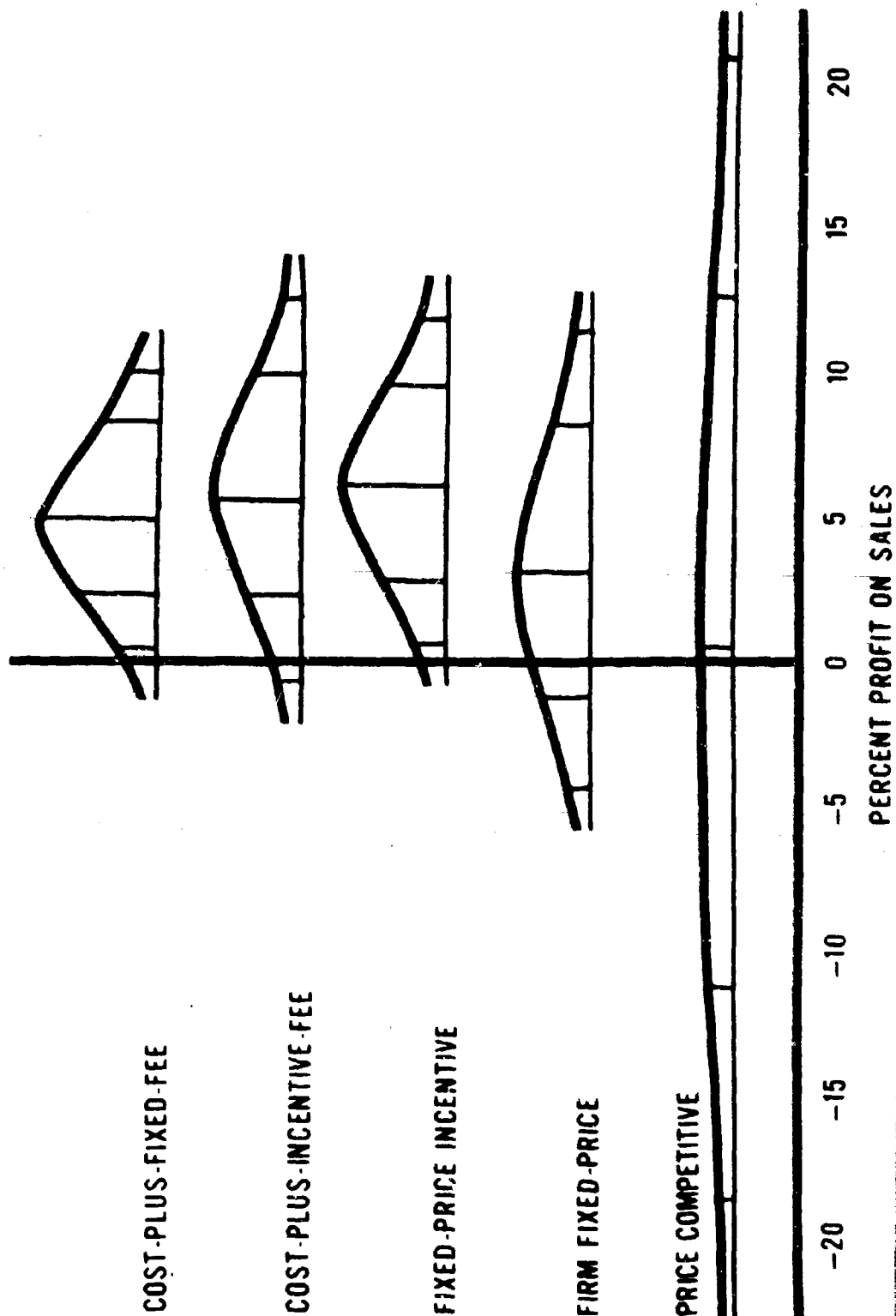


CHART 15

Chart I-6

IMPACT OF 36 FFP CONTRACT LOSSES ON 1966 (BEFORE TAX) PROFITS

	TOTAL SAMPLE HIGH & MEDIUM VOLUME COMPANIES	36 CONTRACTS <sup>1</sup>	IMPACT <sup>2</sup>
DEFENSE SALES	\$14,738 Million	\$340 Million	\$14,398 Million
PROFITS (LOSS)	\$ 664 Million	(\$103 Million)	\$ 767 Million
PROFIT (LOSS)/SALES	4.5%	(30.32)%	5.24%
TCI	\$ 4,911 Million	\$110 Million	\$ 4,801 Million
PROFIT (LOSS)/TCI	13 %	(92.23)%	15.19%

FFP SALES	\$ 5,735 Million	\$340 Million	\$ 5,395 Million
FFP PROFIT (LOSS)/SALES	2.9%	(30.32)%	4.95%
FFP PROFIT (LOSS)/TCI	8.23%	(92.23)%	14.31%

<sup>1</sup>This column shows the data on 36 loss contracts with 9 companies.

<sup>2</sup>The Impact column reflects what the sample data would be if the data on the 36 contracts were deducted from the totals.

C. CAPITAL MARKET ANALYSIS

A brief analysis of the earnings and of the stock market price performance of the participating companies indicates that companies primarily engaged in defense business have had lower price/earnings ratios since 1960 than those primarily in commercial business and those with a greater mix of defense and commercial business. Changes in market value over a ten-year period do not consistently favor companies with defense or commercial business concentration, but show best results for companies with a mixture of defense and commercial sales. (Reference: Section VI.)



## SECTION II

### PROFIT/CAPITAL INVESTMENT RATIOS

#### AND

### CAPITAL INVESTMENT TURNOVER

Company management is responsible for generating a return on investment which is satisfactory to shareholders and lenders. They must therefore relate profit to capital investment. Profit/capital investment is related to profit/sales as follows:

$$\frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Investment}} = \frac{\text{Profit}}{\text{Capital Investment}}$$

The sales/capital investment ratio, which can be used to transform profit/sales into profit/investment, is capital turnover.

In this report two measures of capital investment are used: equity capital investment (ECI) and total capital investment (TCI).<sup>1</sup> Therefore, two capital turnover ratios are employed: equity capital turnover (sales/ECI) and total capital turnover (sales/TCI).

Since profit/capital investment is dependent on capital turnover as well as profit/sales, capital turnover ratios are included in the tables of this section. Capital turnover is affected by the nature of the business (as some industries require more investment per sales dollar than others), company investment policy, competence in selection and use of facilities and equipment by the contractor, government policy on furnishing facilities and equipment, business volume, and subcontracting policy. Trends in capital turnover and differences

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<sup>1</sup>As mentioned in Section IX, total capital investment is defined to include equity capital investment and long-term debt.

between that turnover in defense and commercial business can therefore result from any combination of those factors.

In the tables that follow, the commercial business data presented are those obtained from companies with high and medium volume defense business. FTC/SEC data are also presented for a comparable segment of industry. These data reflect experience of companies in the six durable goods categories whose products are most comparable to those durable goods purchased by the DoD.

The combined high and medium volume company sales shown in Table II-3 cannot simply be divided by the capital amounts to obtain capital turnover. The medium and high volume sample data represent different percentages of the associated populations, and therefore, the ratios for the two categories must be combined on a weighted basis. For the same reason, the weighted averages in Tables II-1 and II-2 will not necessarily multiply to the Profit/ECI and Profit/TCI ratios.

In studying the data, the reader is cautioned not to exaggerate the upward trends in commercial profit/ECI and profit/TCI shown in Tables II-1 and II-2. 1958 and 1960-1961 were recession periods. As is typical in such periods, commercial business was affected more than defense business. Separate defense and commercial profit data were not obtained for years prior to 1958, but an analysis was made of 1956 and 1957 FTC/SEC data because FTC/SEC data were observed to follow the general pattern of the commercial business data of the sample companies in 1958-1966. The FTC/SEC data showed lower profit/ECI and profit/TCI ratios in 1958, 1960, and 1961 than in any other year in the 1956-1966 period.

PROFIT/EQUITY CAPITAL INVESTMENT  
Companies with High and Medium Defense Volume  
Averages Weighted by Company Sales

	1958	1959	1960	1961	1962	1963	1964	1965	1966
<u>Defense Business</u>									
Profit/Sales (%)	5.37	5.07	4.03	4.26	4.24	3.92	3.97	4.84	4.47
ECI Turnover	4.7	4.7	4.6	4.3	4.3	4.1	3.9	3.8	3.9
Profit/ECI (%)	25.01	23.66	21.06	18.46	18.33	16.14	15.56	18.21	17.44
<u>Commercial Business</u>									
Profit/Sales (%)	6.63	6.67	4.29	5.88	8.15	8.43	9.61	10.11	9.16
ECI Turnover	2.6	2.7	2.7	2.9	2.9	2.7	2.8	2.8	3.0
Profit/ECI	17.31	17.71	11.76	16.84	23.53	23.07	27.35	28.71	27.49
<u>FTC/SEC Data</u>									
Profit/Sales (%)	7.1	8.9	7.8	7.7	8.9	9.1	9.5	10.4	10.0
ECI Turnover	2.3	2.4	2.4	2.3	2.4	2.5	2.5	2.6	2.7
Profit/ECI	16.5	21.9	18.5	17.8	21.9	22.6	24.1	27.4	27.1

Table 11-1

(Columns will not multiply due to weighting.)

PROFIT/TOTAL CAPITAL INVESTMENT

Companies with High and Medium Defense Volume  
Averages Weighted by Company Sales

	1958	1959	1960	1961	1962	1963	1964	1965	1966
<u>Defense Business</u>									
Profit/Sales (%)	5.37	5.07	4.53	4.26	4.24	3.92	3.97	4.84	4.47
TCI Turnover	3.8	3.8	3.8	3.4	3.4	3.2	3.1	3.0	2.9
Profit/TCI (%)	20.38	19.06	16.99	14.63	14.34	12.54	12.18	14.30	12.97
<u>Commercial Business</u>									
Profit/Sales (%)	6.63	6.67	4.29	5.88	8.15	8.43	9.61	10.11	9.16
TCI Turnover	2.0	2.1	2.1	2.2	2.2	2.0	2.1	2.1	2.2
Profit/TCI (%)	13.38	13.84	9.19	13.17	18.07	17.15	20.56	21.33	19.71
<u>FTC/SEC Data</u>									
Profit/SALES (%)	7.1	8.9	7.8	7.7	8.9	9.1	9.5	10.4	10.0
TCI Turnover	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.2
Profit/TCI (%)	14.1	18.8	15.9	15.1	18.5	19.2	20.4	23.1	22.6

Table II-2

(Columns will not multiply due to weighting.)

# CAPITAL TURNOVER

Companies with High and Medium Defense Volume  
Averages Weighted by Company Sales  
(\$ in millions)

	1958	1959	1960	1961	1962	1963	1964	1965	1966
<u>Defense Business</u>									
Sales (\$)	12,706	13,372	13,281	14,212	15,380	14,882	13,500	12,759	14,738
ECI (\$)	2,671	2,814	2,769	3,145	3,404	3,463	3,325	3,297	3,684
ECI T/O*	4.7	4.7	4.6	4.3	4.3	4.1	3.9	3.8	3.9
TCI (\$)	3,267	3,486	3,416	3,942	4,316	4,425	4,184	4,123	4,911
TCI T/O**	3.8	3.8	3.8	3.4	3.4	3.2	3.1	3.0	2.9
<u>Commercial Business</u>									
Sales (\$)	6,044	6,971	8,193	8,116	8,452	8,504	9,707	11,334	13,537
ECI (\$)	2,357	2,680	3,012	2,881	2,953	3,123	3,447	4,020	4,590
ECI T/O*	2.6	2.7	2.7	2.9	2.9	2.7	2.8	2.8	3.0
TCI (\$)	3,006	3,395	3,836	3,661	3,786	4,101	4,464	5,283	6,290
TCI T/O**	2.0	2.1	2.1	2.2	2.2	2.0	2.1	2.1	2.2

## FTC/SEC Data

ECI T/O*	2.3	2.4	2.4	2.3	2.4	2.5	2.5	2.6	2.7
TCI T/O**	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.2

\*Profit ÷ Profit  
ECI Sales

\*\*Profit ÷ Profit  
TCI Sales

from tables in Section X.

from tables in Section X.

Table II-3

(Columns will not multiply due to weighting.)

### SECTION III

#### PROFIT/SALES RATIOS

##### A. PROFIT BY TYPE OF BUSINESS (DEFENSE/COMMERCIAL)

Table III-1 presents sales data and profit/sales ratios. The first three sets (lines) of the table consist of information from the samples of contractors with high and medium volume defense business. They represent, in order, defense and commercial business, defense business only, and commercial business only of the sample companies. Defense business includes both prime and subcontract business. The fourth set of information in Table III-1 is taken from FTC/SEC reports and represents profit as a % of sales for the six FTC/SEC durable goods categories whose products are most comparable to those ordinarily procured by the DoD.

The years 1958-1966 are covered. Sales are shown in millions of dollars. Profit as percent of sales figures are averages, weighted on the basis of the associated sales.

##### B. PROFIT BY TYPE CONTRACT

In Table III-2 the sample defense sales data of high and medium volume defense contractors, weighted by company defense sales, are separated into categories representing different contract type and contractual arrangements.

The first two rows of the table separate prime contract sales from subcontract sales. The third row shows price-competitive sales, but only for prime contracts. The next four rows break down sales into the four most common contract types: CPFF, CPIF, FPI, and FFP.<sup>1</sup> Of the four types, only FFP is separated into prime and subcontract business. The CPFF, CPIF, and FPI data include only small amounts of subcontract dollars.

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<sup>1</sup>Fixed price redeterminable sales are not included because they have been decreasing continually in amount and now represent a very small percentage of total DoD business.

Some companies were unable to provide data broken out in the form required for presentation in this section. For example, while all of the companies separated CPFF, CPIF, FPI, and FFP sales, only 16 of the 23 high volume companies and 14 of the 17 medium volume companies provided a prime vs. subcontract sales breakdown. Hence, prime and subcontract sales do not sum to total sales, the difference being the sales of the companies that made no submission of the breakdown data. The total of the CPFF, CPIF, FPI, and FFP sales shown in the table do not sum to total defense sales because other types of contracts are not shown (e.g., fixed-price re-determinable, labor hours, time and material, and facility contracts).

Contractor identification of price-competitive contracts did not correspond to that of the Government. To assure that data on price competitive business correspond to the DoD's view of competition, DoD personnel designated price-competitive contracts for each company, and the company provided related data. Data were received from only 8, 13, and 17 contractors for the years 1958, 1959 and 1960, respectively. In our opinion the significance of the ratios derived from these limited samples can be questioned. In 1961, 23 contractors furnished data and in each of the following years data were received from 27 (1962-64) or 26 (1965-66) contractors. Several companies were unable to break out their data on DoD identified competitive contracts; hence the total amounts reported are less than the total identified competitive awards to the sample companies. It should be noted that most of the sample companies believed that a substantial part of their business and particularly FFP business was price competitive, although not identified as such by DoD. The major portion of competitive business was FFP, but in some cases other types (e.g., FPI, FPR) were coded by DoD as competitive and thus are included in the totals.

Comparative Profit/Sales Ratios  
Companies with High & Medium Defense Volume  
Averages Weighted by Company Sales Volume

		(\$ in millions)									
		1958	1959	1960	1961	1962	1963	1964	1965	1966	
Defense & Commercial Sales	(\$)	18,749.8	20,342.6	21,474.1	22,327.4	23,831.4	23,385.0	23,207.0	24,093.8	28,275.2	
Profit as % of Sales		5.81	5.66	4.43	4.87	5.68	5.65	6.45	7.42	6.80	
Defense Sales	(\$)	12,705.6	13,371.9	13,281.0	14,211.6	15,379.9	14,881.5	13,499.6	12,759.4	14,738.4	
Profit as % of Sales		5.37	5.07	4.53	4.26	4.24	3.92	3.97	4.84	4.47	
Commercial Sales	(\$)	6,044.2	6,970.7	8,193.1	8,115.8	8,451.5	8,503.5	9,707.4	11,334.4	13,536.8	
Profit as % of Sales		6.63	6.67	4.29	5.88	8.15	8.43	9.61	10.11	9.16	
FTC/SEC Data:											
Profit as % of Sales		7.1	8.9	7.8	7.7	8.9	9.1	9.5	10.4	10.0	

Table III-1



DEFENSE SALES AND PROFIT BY TYPE CONTRACT  
COMPANIES WITH HIGH AND MEDIUM DEFENSE VOLUME  
AVERAGES WEIGHTED BY COMPANY SALES IN THE PERTINENT CATEGORY

	1958	1959	1960	1961	1962	1963	1964	1965	1966
(\$ in Millions)									
Prime Con. Sales (\$)	6786.1	6805.8	6818.6	7538.0	8674.7	8630.6	7586.7	8198.1	9396.1
Profit/Sales (%)	5.19	4.84	4.88	4.76	4.52	4.00	4.14	5.24	4.86
Subcon. Sales (\$)	860.4	1102.6	1082.8	1088.7	1110.0	1123.5	1120.6	1199.5	1166.7
Profit/Sales (%)	4.22	5.19	3.94	4.75	4.66	4.09	4.61	4.33	6.46
Prime Con. Price Com- petitive Sales (\$)	133.3	206.3	293.3	482.7	763.0	1028.3	962.2	1269.5	1600.0
Profit/Sales (%)	11.0	4.65	3.11	2.70	2.98	(0.17)	(4.23)	1.63	0.35
CPFF									
Sales (\$)	5174.9	6113.0	6787.3	6808.6	6535.9	4117.0	2323.5	1379.1	1541.2
Profit/Sales (%)	3.86	3.79	3.71	3.55	3.50	3.34	3.70	4.67	4.65
CPIF									
Sales (\$)	523.9	1100.3	839.5	1154.9	1460.5	2585.6	2710.9	2205.9	2176.5
Profit/Sales (%)	2.70	4.59	6.11	4.37	3.96	4.56	4.91	4.98	5.34
FPI									
Sales (\$)	3881.2	3174.9	2674.4	2898.6	3547.1	4245.8	4682.4	4253.4	4717.3
Profit/Sales (%)	6.33	5.73	5.84	6.75	6.29	5.57	6.06	6.46	5.87
FFP									
Total Sales (\$)	2132.5	2007.5	2221.0	2497.5	2914.5	3221.0	3281.5	4572.3	5734.7
Profit/Sales (%)	7.16	7.33	5.37	3.85	3.92	2.40	0.91	3.70	2.90
Pri. Con. Sales (\$)	721.9	743.9	935.4	1110.2	1244.9	1385.4	1603.7	2982.0	4002.3
Profit/Sales (%)	8.66	7.48	5.66	4.39	2.80	1.17	(0.02)	4.36	2.78
Subcon. Sales (\$)	250.7	238.0	264.7	296.2	366.1	445.7	445.8	498.6	556.2
Profit/Sales (%)	5.50	7.84	7.65	7.57	6.81	4.38	5.37	3.69	6.79

## SECTION IV

### DEPARTMENT OF DEFENSE PROFIT REVIEW SYSTEM

On January 1, 1964 the DoD policy relative to the application of the Weighted Guidelines (ASPR 3-808) became effective. It has been DoD policy since January 1964 that the target profits in all negotiated contracts be arrived at as a result of the application of this policy. Shortly after the establishment of this policy, the DoD developed a system to attempt to insure that the policy was being implemented as intended. This system requires that in the case of certain negotiated contracts,<sup>1</sup> each contracting officer responsible for a negotiation complete a form (DD 1499), reflecting the cost element weighting that led to the composite negotiated target profit. It must be recognized that these forms reflect the negotiator's opinion as to the element weighting and the target profit. Contracts are not intended to be negotiated by elements.

As of the close of FY '67, the system reflects negotiated "going in" profits on contracts totaling \$35.8 billion which were awarded during the WGL period (FY '64-67). For comparative purposes (i.e., to test the implementation of the WGLs), DoD also developed data on negotiated "going in" profit rates for contracts totaling \$33.7 billion for the Fiscal Year 1959-63 period, i.e., before the WGLs became effective. In essence, the system to date reflects what has happened to negotiated target profits since January 1964 as compared to a five-year period prior to January 1964.

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<sup>1</sup>Reports were required on all contracts over \$1 million in the base period, 1958-63. During the WGL period 1964-67, reports were required on contracts in excess of \$500 thousand until 1 July 1966, at which time the figure was lowered to \$200 thousand. Certain special contract arrangements, e.g., personal services, were exempt. Smaller contract negotiations were covered by limited sampling.

The attached Table IV-1 depicts, by type contracts a comparison of negotiated target profits for the pre-WGL period, FY '59-63 vs. the WGL period, FY '64-67.

Another feature of the DoD in-house Profit Review System is the ability of the system to reflect earned profits by individual negotiated contracts after these contracts have been completed. Such data will be obtained on all types of negotiated contracts other than firm-fixed-price contracts.

There is a significant average time lag between the time of contract award and the completion of the contract. At time of completion, a DD Form 1500, which is a "coming out" form, and is the counterpart of the DD Form 1499 or "going in" form, is prepared.

Table IV-2 is a reflection of consolidated average negotiated profit rates by type contract vs. average earned profit rates for the same consolidated contracts. It must be recognized that limited "coming out" data by type contract are available. In this instance the table covers only \$11.2 billion in closed contracts, all of which were awarded prior to 1 January 1964. These data do, however, clearly demonstrate the difference between average negotiated profits and average earned profits.

It should also be noted that the average earned profits do not reflect unallowable/nonrecoverable costs. After converting profits on sales as used by contractors to profit on costs as used by DoD it will be found that should average unallowable/nonrecoverable costs be deducted from the earned profit averages, the resultant earned profits are reasonably comparable with profits by type contract as reflected in Section III of this report.

The purpose in presenting this brief description of the DoD negotiated contract data is to distinguish between the

DoD system and the review which produced this report as a result of LMI work with 65 contractors.

The LMI profit study task will require an increase in its analysis of the consolidated 1499 and 1500 Forms data as those data expand. An improved understanding of the relationship between the data collected under the DoD system and the data received from contractors participating in this study should result.

The present WGL Profit review system, while representative of negotiated procurement, is not appropriate for evaluating the WGLs without further refinement and analysis. One of the problems in the system is that a number of contracts included were not based on the WGLs. Profit by type contract is influenced by types of work, i.e., R&D or production. Finally, the lack of any data on firm fixed-price realized profits precludes a meaningful analysis of this type contract. This is particularly important in view of the growth of FFP contracting.

**DOD PROFIT REVIEW SYSTEM**  
**NEGOTIATED "GOING IN" PROFIT RATES AS REPORTED BY CONTRACTING OFFICERS**  
(Dollars in Millions)

	Base Period F.Y. 1959-63				WGL Period F.Y. 1964-67			
	Dollars		Profit Rate on		Dollars		Profit Rate on	
BY TYPE OF CONTRACT:	No.	Cost	Sales	No.	Cost	Sales	Cost	Sales
FFP	1582	6,565	9.0	3064	9,490	11.0	9.9	
FPI	396	10,749	8.9	915	9,116	9.4	8.6	
CPIF	136	3,948	6.0	971	4,605	7.4	6.9	
CPFF	1501	10,059	6.2	1490	2,601	6.9	6.4	
Total--All Types	3615	31,321	7.7	6440	25,812	9.4	8.6	

Table IV-1

DOD PROFIT REVIEW SYSTEM  
REALIZED PROFIT RATES ON COMPLETED CONTRACTS

DOD DATA SYSTEM  
Contracts Awarded July 1, 1958-December 31, 1963  
(Pre-Weighted Guidelines)<sup>1</sup>

<u>Type of Contract</u>	<u>No. of Con- tracts</u>	<u>Total Costs (Millions)</u>	<u>Average Negotiated Profit % of Cost</u>	<u>Average Earned Profit</u>	
				<u>% of Cost</u>	<u>% of Sales</u>
Firm Fixed-Price	No Data				
Fixed Price Redetermination	351	\$ 2,346	9.3	8.6	7.9
Fixed Price Incentive	311	3,883	9.3	9.2	8.4
Cost Plus Incentive Fee	75	331	6.4	7.2	6.7
Cost Plus Fixed Fee	<u>1105</u>	<u>4,689</u>	6.4	6.1	5.7
Total Completed Contracts Re- ported	<u>1842</u>	<u>\$11,249</u>			

<sup>1</sup>Contracting officers have not yet submitted sufficient data on completed contracts which were placed under the Weighted Guidelines (1964-67) to permit a meaningful presentation.

## SECTION V

### UNALLOWABLE AND NONRECOVERABLE COSTS

In this report, the profit reported for defense business does not include costs which are unallowable or nonrecoverable on defense contracts. Those costs are subtracted from sales revenue along with allowable costs of sales so that commercial and defense profit figures are comparable.

Data were collected on unallowable and nonrecoverable costs, however, to establish the amounts of those costs relative to sales and profit, as well as to establish the effect they have on the difference between government data on negotiated profit and contractor data on realized profit.

Only data for companies with medium and high volume defense business are included in this analysis. A small sampling of low volume companies indicates their unallowable/nonrecoverable cost percentages are lower, as would be expected from the fact that a smaller portion of the defense business of low volume companies is cost reimbursable or negotiated, and hence a smaller portion comes under Section XV of the ASPR (Contract Cost Principles and Procedures).

Of the 40 companies with medium and high volume defense business, 32 reported their total unallowable and nonrecoverable costs for 1958 through 1964, and 37 reported them for 1965 and 1966. Twenty-two companies provided a breakdown into the categories shown in Table V-3. This more detailed breakdown is shown only for 1965 and 1966. It highlights interest, IR&D, and contributions and donations. The "Other" category in the tables consists primarily of advertising, unusual amortization, and entertainment costs.

UNALLOWABLE AND NONRECOVERABLE COSTS									
for Companies with High & Medium Defense Volume <sup>1</sup>									
- Averages Weighted by Company Defense Sales -									
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Defense Profit as % of Defense Sales	5.37	5.07	4.53	4.26	4.24	3.92	3.97	4.84	4.47
Unallow. & Nonrecov. Costs as % of Defense Sales	1.52	1.45	1.44	1.35	1.48	1.50	1.56	1.76	1.73

Table V-1

UNALLOWABLE AND NONRECOVERABLE COSTS									
for Companies with High & Medium Defense Volume <sup>1</sup>									
- Unweighted Averages -									
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Defense Profit as % of Defense Sales: Avg. (Mean)	4.44	4.81	4.76	4.63	4.63	3.49	3.05	3.68	3.57
Unallow. & Nonrecov. Costs as % of Defense Sales:									
Avg. (Mean)	1.70	1.90	1.85	1.77	1.78	1.90	1.90	2.25	2.04
10th Percentile	0.14	0.48	0.43	0.42	0.46	0.26	0.35	0.49	0.82
Median	1.14	1.07	1.17	1.25	1.38	1.61	1.56	1.64	1.58
90th Percentile	4.93	3.23	3.28	2.72	3.05	3.44	3.67	5.69	3.07

Table V-2

<sup>1</sup>Based on a sample of 20 High and 12 Medium Defense Volume Companies for 1958 through 1964 and 23 High and 14 Medium Companies for 1965 and 1966.



## UNALLOWABLE AND NONRECOVERABLE COST BREAKDOWN

for Companies with High and Medium Defense Volume<sup>1</sup>  
 -- Averages Weighted by Company Defense Sales --

Type Unallowable or Nonrecoverable Cost	% of Defense Sales	
	1965	1966
Interest	0.43	0.45
Independent Research & Development	0.80	0.73
Contributions and Donations	0.05	0.04
Other	0.65	0.62
Total	1.93	1.84

<sup>1</sup>Based on a sample of 15 high and 7 medium defense volume companies.

Table V-3

## SECTION VI

### CAPITAL MARKET ANALYSIS

A capital market analysis of companies with annual total sales in excess of \$25 million was performed by selecting a sample of companies that are listed on a major stock exchange and grouping these companies as follows:

1. Defense - Those companies that are heavily engaged in defense business (defense sales averaging more than 70% of total sales in the years 1957 - 1966).
2. Mixed - Those companies that have a large segment of their sales in non-defense business (30% to 90% average non-defense sales in the years 1957 - 1966).
3. Commercial - Those companies whose defense sales are consistently less than 10% of their total sales.
4. Dow Jones Industrials - 30 large companies representing a cross section of American industry.

Both the defense and mixed groups of companies were extracted from the samples used in Section X of this report. Companies that were listed on major stock exchanges whose data submitted to us represented the total company operation were identified. Of the 40 companies in the high and medium defense volume categories, 9 companies submitted data only for their divisions heavily engaged in defense business, and two were not listed on major stock exchanges. For the other 29 companies, we calculated their average ratio of defense sales to total sales and classified 11 companies as defense companies according to the above rules. The remaining 18 companies had varying defense sales of 10 to 70%, and were therefore classified as mixed. Inasmuch as our study started with 1958, the companies

classified as commercial (33) were selected from the 1958 edition, Fortune 500, utilizing all of the companies on the list that are included in the six durable goods categories selected for the FTC/SEC large industry segment discussed in Section IX. This list was further decreased to include only those companies that had less than 10% defense sales throughout the 1958-1966 time period.

Table VI-1 is a depiction of the capital market performance and price/earnings ratios of the four groups - defense, mixed, commercial and the Dow Jones industrials. The capital market performance assumes an investment of \$1000 in each group, equally spread over the companies in the group, as of 1 January 1957, and a similar investment in each group as of 1 January 1959. Stock splits and stock dividends are taken into account, and calculations assume reinvestment of all cash dividends. The market value of the investment is then reflected at each year-end (1957 or 1959 through 1966). Similarly, the price/earnings ratios for each group are reflected at each year-end from 1957 through 1966.

# CAPITAL MARKET ANALYSIS

At end of year	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
<u>Capital Market Performance</u>										
Defense	\$ 1104	2061	2530	2026	2439	1959	1674	1566	2266	2265
Mixed	\$ 894	1418	1962	2266	3032	2539	2581	2580	4596	4674
Commercial	\$ 842	1448	1942	1695	2214	1968	2467	2777	3310	2877
Dow Jones Ind.	\$ 915	1268	1521	1427	1747	1614	1946	2310	2637	2223
Defense	\$		1228	983	1183	950	812	759	1098	1098
Mixed	\$		1384	1598	2134	1790	1820	1825	3240	3295
Commercial	\$		1341	1170	1529	1359	1704	1918	2286	1987
Dow Jones Ind.	\$		1200	1125	1377	1272	1534	1821	2078	1752

## Price/Earnings Ratio (After Tax)

Defense	12.4	19.2	20.9	19.0	21.0	12.7	12.2	12.3	16.6	12.0
Mixed	13.6	18.8	21.6	27.4	25.1	25.1	18.5	14.4	19.3	14.6
Commercial	11.7	25.7	15.8	16.7	24.0	16.5	16.5	16.8	17.2	12.6
Dow Jones Ind.	12.1	20.9	19.8	19.1	22.9	17.9	18.5	18.8	18.3	13.7

Table VI-1

## SECTION VII

### DISCUSSIONS WITH DEFENSE INDUSTRY

#### A. GENERAL

A review of the financial data submitted by the companies participating in this study led to the recommendation on the part of Defense management and the DIAC Subcommittee that LMI interview some of these companies in an attempt to "get behind" and better understand the reasons for the profit results indicated by the submitted data. It was suggested that the discussions with the companies be primarily concerned with:

1. Why is defense business profitability what it is?
2. What defense profit should be, and
3. What changes, if any, should be made in DoD policies and practices as they affect profit?

A guideline for discussion with the management of a few defense contractors was developed. Six companies were interviewed initially, and the consolidated results of the discussions were then reviewed with Defense management and discussed with the DIAC Subcommittee members.

Discussions also indicated the necessity for contractors' senior management to devote considerable time to considering the above three areas of question. Consequently, Appendix B was left with 23 companies for their consideration, and Appendix C was developed for use as a guide in discussions to be held later with the management of these companies.

Extensive discussions were then held with the management of the 23 companies which participated. While this section

reflects a consolidation of responses from 23 companies, it should be recognized that in each instance many persons at top management levels were responsible for their individual company's response. In the typical interview more than four persons in each company participated. A brief recap of the results of those discussions is reflected in Appendix D.

The consolidated information and views received from the first six companies contacted was virtually the same as the information and views received from the 23 companies. In other words if the observations of the first six had been multiplied by four they would have approximated the data received from the 23. It was therefore decided that this type discussion with more than the 23 was not likely to lead to significant additional information or suggestions.

In developing this section of the report, LMI has confined its role to that of a summarizer and synthesizer and has avoided interpretation or evaluation of the contractors' statements.

#### B. WHY DEFENSE BUSINESS PROFITABILITY IS WHAT IT IS

##### 1. Comparability of Defense and Commercial Products and Their Profitability

- a. Eleven of 23 companies produce some defense products that are comparable to their commercial products. In all instances such comparable products were a minor portion of each company's business.
- b. The defense profits are less than the commercial profits per unit in 8 of the 11 instances.

##### 2. Defense vs. Commercial Competition

All 23 companies were doing both defense and commercial business.

- a. With two exceptions, all companies doing both defense and commercial business said their defense business is more competitive than their commercial business.
- b. The primary reasons, stated in order of importance, for defense competitive profits being less than commercial profits are:
  - Severity of competition
  - Higher degree of unpriced risks
  - Lower contractor profit objectives
  - Inadequate specifications
  - "Buy-In" by interviewed company or competitors
  - Overcapacity in some defense product line
  - Government bargaining position
- c. Twenty of 23 contractors believed their fixed price competitive profits on defense sales are too low, as a result of this competitive environment.
- d. Nineteen of 23 contractors were in favor of greater application of multi-year procurement (MYP)<sup>1</sup> competition on proven items. They believed that better long-range planning would develop and thereby improve profits and production efficiencies. All 19 believe that MYPs should not be level priced<sup>2</sup> and that improved application of learning curves<sup>3</sup> in MYP is essential. It was suggested that this action would allow this type defense business to be more comparable to commercial business.

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<sup>1</sup>ASPR 1-322.

<sup>2</sup>Average unit prices are used based on all quantities for all years of MYP.

<sup>3</sup>Use of higher unit prices in early years and lower unit prices in later years to reflect efficiency with experience and as production is increased.

Concern was expressed that many contingencies (due to economic conditions) exist in the defense contracting environment causing increased cost but not increased prices because of inability to include contingency factors. This situation does not exist to the same degree in commercial business.

- e. Sixteen of 18 contractors stated that their defense profits were adversely affected as a result of decisions or actions within their own organizations, primarily caused by poor estimating or entering a product field for which they were not qualified. It was noted that similar poor decisions are made in their commercial business but that there is an opportunity to recoup on commercial business which does not exist on defense business.
- f. All contractors were in favor of the sound application of life cycle costing (LCC)<sup>1</sup> in competition, noting that much sound commercial contracting is carried on in a similar but less detailed manner. They believed that improved escalation clauses<sup>2</sup> in the application of LCC were essential. They also recognized that DoD was faced with serious problems in developing the additive LCC factors. The majority of contractors mentioned that the Government must recognize problems in developing useful life cycle cost projection information. Maintenance and reliability

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<sup>1</sup>An approach for including estimated operational and support costs in evaluating proposals for competitive award.

<sup>2</sup>ASPR 7-106 and 7-107.



information were particularly mentioned. They believed the solutions to these problems were essential for sound LCC application. Sound life cycle cost buying, they believed would:

- keep less qualified companies out of the competition
- save government money and increase quality
- raise the profits of the more qualified contractors

### 3. Prime vs. Subcontract Defense Business

Nineteen of 22 contractors preferred to do business as prime contractors rather than as subs. A few companies mentioned that they believed the DoD did a better job of surveillance of primes than the primes did in managing their subs. Primary stated reasons for wanting to be prime contractor were:

- Subs are required to meet all the government requirements plus added requirements imposed by the prime.
- Better planning and greater flexibility possible as a prime.
- Fear of prime stealing and capitalizing on technical know-how.

### 4. Reasons for Firm Fixed-Price (FFP) and Fixed-Price (FP) Competitive Profits Being Lower than Profits on Other Types of Contracts

Nineteen out of 23 companies indicated that they were not satisfied with their FFP profits as compared with profits on other type contracts. Twenty out of 23 were not satisfied with FP competitive profits as compared with profits on other type contracts.

The primary reasons given for FFP and FP competitive profits being lower than profits on all other type contracts in order of average importance, were:

- Estimating is not an exact science. You are seldom accurate. Over-optimism frequently sets in. Losses, which are not recoupable, result from over-optimistic price estimating on FFP contracts. Many companies were quite self-critical with respect to this point.
- Government has encouraged competition sometimes to the point of over-capacity. "Buying-in" on competitive procurement is often necessary in order to get in or stay in a particular product line.
- The volume of developmental FFP contracts has increased. Such contracts are particularly risky. Very seldom is a satisfactory profit made on such contracts.

##### 5. Weighted Guidelines

ASPR 3-808, the Weighted Guidelines, and their impact on defense profits was discussed in great detail. The results of these discussions follow:

- a. Those contractors who are familiar with the policy set forth in ASPR 3-808 are in favor of the policy. This was discussed with 22 individual contractors, all of whom believe the policy to be sound.
- b. Eleven of 21 contractors believe that the Weighted Guidelines have caused them to experience a wider range of negotiated target profits than before the Guidelines were promulgated.

- c. Seventeen of 22 contractors were of the opinion that the Weighted Guidelines are resulting in higher average negotiated profits.
- d. Seven of 23 contractors stated that the Weighted Guidelines recognize past contract performance.
- e. Sixteen of 21 contractors believe that the Weighted Guidelines recognize increased risk.
- f. Fifteen of 21 contractors believe that the Weighted Guidelines recognize high technical skill requirements.
- g. None of the 23 contractors believes that the Weighted Guidelines encourage contractors to supply their own facilities.
- h. Twenty-two of the 23 contractors agreed that the Weighted Guidelines allow for insufficient emphasis on a contractor's capital investment. Twenty-one of the 23 contractors believe that the Weighted Guidelines are deficient in that they do not consider volume of defense business as related to total defense investment.

C. WHAT DEFENSE PROFITS SHOULD BE

In discussing the subject of what defense profits should be, a number of viewpoints were expressed. Almost every person with whom this subject was discussed had a slightly different idea as to what defense profits should be, particularly when compared with commercial profits. Companies found it difficult to give specific answers to this question. Consequently, related areas of discussion were covered.

1. Complexity, Risk, and Carry-Over Benefits in Defense Business

- a. Eighteen of 23 contractors with whom this subject was discussed in detail were of the opinion that managing a defense company is more complex than managing a commercial business. These 18 contractors all have a significant amount of both defense and commercial business. Five contractors were of the opinion that the managerial complexities were about the same.
- b. Twelve of 23 contractors believe that the financial risks in doing defense business are greater than in commercial business. Eight believe that the financial risks are roughly the same, and three that such risks are less.
- c. Nine of 22 contractors believe that they have commercial carry-over benefits as a result of doing defense business. Nine of 21 contractors believe that they have defense carry-over benefits as a result of doing commercial business.

2. Defense Industry Profit Objectives

A few companies with whom this subject was discussed did not have explicit profit objectives. Twenty companies were able to state their profit objectives. The unweighted averages of these objectives were as follows:

Profit to Sales (before tax)

- a) Defense average 10.4%.  
Defense Range 7% to 20%.
- b) Commercial average 16.94%.  
Commercial range 9% to 27.5%.

Profit to Total Capital Investment (before tax)

- a) Defense average 26.44%.  
Defense range 18% to 40%.
- b) Commercial average 32.14%.  
Commercial range 20% to 50%.

3. Based on Total Capital Investment, How Should Defense Profits Compare with Commercial Profits?

Of 23 contractors with whom this was discussed, none was of the opinion that defense profits should be higher than commercial profits. Five were of the opinion that defense profits should be lower. Eighteen believed that defense profits, under similar circumstances, should be approximately the same.

It was recognized by all persons with whom this was discussed that it is a practical impossibility to develop a system under which defense profits could - year in and year out - be structured to approximate commercial profits, or for that matter any given profit percentage.

The five contractors believing that defense profits should be lower than commercial profits were inclined to think that such profits should be approximately 10% lower than commercial profits. Their reasons for believing that defense profits should be lower were:

- a) They believe there is less financial risk in doing business with the Government. These contractors emphasized that the financial risks in doing government research and development work are much less than in the commercial field.
- b) Defense industry has a public obligation not to make more money on public funds

than on commercial business. It is the opinion of these contractors that while comparable profits might be made in comparable situations, this public obligation is such that defense industry profit, generally speaking, should be slightly less than commercial profit.

D. WHAT CHANGES, IF ANY, SHOULD BE MADE IN DoD POLICIES AND PRACTICES AS THEY AFFECT PROFIT?

The following points were emphasized by the defense industry officials interviewed, not necessarily in order of importance, relative to changes which should be considered by Defense management in the interest of improved profit policies and practices.

- a. All 23 contractors with whom this subject was discussed emphasized the need for a continuing program within the DoD and industry to insure that the profit motive is understood. The need for appreciation of the economic role of profit by government and industry negotiators was emphasized.

It was the opinion of many of the contractors that many government negotiators believe that they are properly performing their jobs by reducing contractors' profits. Many managers stated that a significant source of the problem relative to understanding the economic role of profit within DoD may be at the first level of supervision in the Department of Defense. It was suggested that first-line supervisors are highly motivated individuals, often military, with limited appreciation of business and economics. They exercise significant influence on the negotiators working for them in what they consider to be a sound manner but which is

contrary to the profit and other procurement policies established at the Defense management level.

- b. Almost every contractor had comments relative to the role of the auditor in the defense procurement environment.

None of these contractors was of the opinion that the role of the auditor should revert to that which existed prior to the establishment of the Defense Contract Audit Agency. It was the general opinion, however, that the audit role should be more clearly defined in the interest of eliminating unproductive and costly cost analysis and audit activities.

There was a widespread general belief on the part of contractors that since the establishment of the Defense Contract Audit Agency, the auditor is, psychologically at least, exercising a degree of influence over negotiators that has never previously been the case. It was believed that this influence would increase with the further implementation of PL 87-653.

It was the belief of these contractors that prenegotiation cost analysis had a much greater influence on the government negotiators' position than the discussions which took place at the negotiation. Negotiators, in other words, are extremely reluctant to deviate from the recommendations of the auditors.

An opinion was expressed by several companies that the entire negotiation, and the role of the auditor, might be more efficiently handled if contractors were allowed access to the factual portions of prenegotiation cost analysis data prior to negotiation.

It was also the opinion, as expressed by a number of contractors, that disallowances - both in over head negotiation and redetermination - have increased. A number of situations illustrating such disallowances were described.

- c. In commenting on the role of the auditor, unallowable-nonrecoverable costs were discussed. It was the general opinion of the 23 contractors that the DoD auditors are too strict in applying Section XV of the ASPR to contracts other than cost type.
- d. More timely contractual coverage was emphasized. As a result of some of the early discussions on this subject it was decided later in the interview sessions to query contractors in more detail regarding the economic impact of delay in contractual coverage. Contractors were, consequently, specifically asked to identify the magnitude of their expenditures as of the date of interview, for which they were not contractually covered. Such contractual expenditures were defined as:
  - 1) Instances in which the contractor had elected to start work prior to contractual coverage.
  - 2) Follow-on business for a particular item for which he had not received coverage.
  - 3) Expenses incurred beyond the funding limitations on letter contracts.
  - 4) Expenses incurred beyond the funding limitations of incrementally-funded programs, and
  - 5) Expenditures for items requiring support of end-items for which the contractor had not been formally, contractually covered, and consequently could not bill.



In discussing these specific points with 17 contractors who did approximately \$6.5 billion in defense business in 1966, their records (as of the time of interview) indicated that they had a combined total of \$259.5 million in expenditures for which they were not contractually covered, or could not bill. The contractors pointed out that this figure is higher than has been normal in recent years. It was also indicated that, to do defense business, uncovered expenditures of this nature must be expected. No contractor had any concern about eventually receiving contractual coverage and eventually being reimbursed.

- e. Progress payments were discussed. The cash drain on contractors due to expenditures for which they temporarily cannot bill was used by many of the contractors as a basis for suggesting an increase in fixed-price progress payments; from the present normal level of 70%<sup>1</sup> to perhaps 90%. It was made clear in a number of instances that while individual contracts of a fixed-price-competitive and firm-fixed-price type may have higher negotiated individual target profits than do CPFF contracts, the overall movement from CPFF to fixed-price contracting has an adverse impact on earned profits even if the risk was the same. This results in part from a cash flow problem. For example, 100% of costs incurred can be received immediately on cost-type contracts. Approximately 70% of costs can be billed on fixed-price contracts. There is a billing and payment delay, however, experienced under a fixed-price contract that is not the case under a CPFF contract. Financing FP contracts requires added capital, often borrowed, which reduces profits.

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<sup>1</sup>Customarily, DoD contracts provide for progress payments of 70% of costs incurred. There are exceptions, some of which involve very large contracts, where payments up to 90% of costs are made.

- f. Several companies mentioned that DoD should redefine the use of cost vs. fixed-price type contracts. These contractors mentioned that the heavy emphasis on fixed-price contracts has led to the extensive application of such contracts to developmental procurement. In a number of such procurements, contractors have been most uncertain in their pricing. Extensive overruns are said to have consequently developed. They believe that in some instances, this situation may be adversely affecting the quality of the end product delivered to the DoD.

It was also the general opinion of contractors that the original developer for a new item should receive - either as a part of the developmental contract or as a separate contract - the first production award for the item. It was argued that many of today's competitive problems could be avoided by such a policy in that the developer would have to prove the usefulness of his developmental data, and qualify the initially-produced product before the product was opened to competition.

- g. Escalation clauses, learning curves and level pricing as applicable to today's contracting environment were discussed by a number of companies. There was a broad consensus that level pricing in some multi-year programs is forcing the contractor to increase his cost estimates in the interest of minimizing his contingent liabilities. Such increased liabilities are believed in some instances to have led to increased cost to the Government. It was suggested that increased application of cost learning curves should be applied to competitive multi-year procurement for billing purposes and in the event of termination. Pricing could then be on a level basis. It was also

suggested that escalation clauses be developed for application where appropriate. Such need would be particularly applicable to longer term contractual arrangements and for periods involving potential large economic changes.

- h. While all contractors were in accord with the policy stated in 3-808 of the ASPR (the Weighted Guidelines) it was their general belief that an increased and improved application of the WGL's at the working level was needed. This thinking was summarized in B.5., above. Several contractors mentioned that they have experienced a recent deterioration in the application of the Weighted Guidelines that is leading to lower negotiated profits.

Several contractors mentioned that any changes in the WGL's should be thoroughly tested before implementation, their general belief being that changes might have greater negative impact than positive impact. It was also mentioned that no one element of the WGL's should be modified without considering the interdependency of all elements.

Several features of the WGL's were suggested for modification consideration. These were:

- 1) After careful consideration of the mechanics of application and assuming that a workable method can be developed, the WGL's should be modified to give greater consideration to a company's volume and capital investment.
- 2) Greater weight, both negative and positive, should be given to government-owned vs. contractor-owned facilities.
- 3) Several contractors mentioned that when negotiating contracts they find themselves much more concerned with the contract ceiling than

with the target. It was consequently suggested that consideration be given to modifying the WGL's to reflect the difference between the ceiling and the target in an increased or decreased negotiated target profit, the thought being that the present target/ceiling relationship is not adequately related to a consideration of the contractor's risk.

- 4) A few contractors suggested that greater consideration should be given in the WGL's to contingencies which threaten contractor's costs, i.e., areas of cost over which contractors have no control.
  - 5) A few contractors suggested that contractors should be informed by the government negotiators of the cost weighting given by the negotiator to the individual cost elements.
  - 6) In view of the increased cost, particularly caused by a cash flow slowdown resulting from the movement from cost-type to fixed-price type contracting, a few contractors suggested that the WGL's should be modified to allow for a slight reduction in cost-type negotiated target profits, and a significant increase in fixed-price type negotiated target profits.
- i. There was a general opinion on the part of the contractors that there is some confusion regarding ASPR 1-311 (Bidding Less than Cost), and more generally known as "Buy-In." Most contractors are of the opinion that buy-in should be discouraged. All contractors believed that buy-in should be strongly discouraged on cost-type contracting. It is the general opinion that

cost-type contracting should not be used when price is of paramount importance.

Approximately two-thirds of the companies were of the opinion that the Government contributes to buy-in. This is frequently caused by insufficient funds to accomplish the work required. Contract definition was cited as a form of buy-in when inadequate or insufficient funding was available. A number of companies mentioned that government negotiators frequently make funding limitation information available to contractors. This consequently affects proposals and causes buy-ins.

While the majority of contractors believe buy-in should be discouraged, they also recognize that occasions frequently arise for absorbing fixed costs or utilizing idle facilities. Where that is the case under a fixed-price environment, the majority of contractors believe that buying in cannot be prevented. It was the management opinion of several contractors that under circumstances where buy-in is intentionally planned, it would be desirable for companies to include a plan for future recovery of costs, or to depict the logic of their management decision to buy-in as a part of their proposal.

E. UNSOLICITED COMMENTS OF DEFENSE INDUSTRY

A. through D. above relate to "Planned Discussions with Defense Industry," and cover the results of structured interviews with officials of defense companies who had an opportunity to prepare themselves for the interviews. As we have indicated, LMI believes that the views summarized in A. through D. are generally representative of defense industry as a whole.

In contrast to A. through D., the following paragraphs of this Section VII are the result of LMI's efforts to record and summarize the unsolicited views and comments made by contractors throughout this study. This material was not systematically gathered and assembled as was that contained in A. through D.; at the same time it is broader in scope and reflects the repeated comments of many of the senior management people in over 100 defense contractors contacted throughout this study. The material came to us in various forms, i.e., letters, during visits, and in telephone conversations. We believe that it can be useful to the Government and to industry alike.

The role of LMI in the preparation of this portion of this Section was as nearly as possible the same as that performed in A. through D., i.e., a summarizer and synthesizer only.

Some of these comments may not be representative of defense industry generally. They are summarized to help in identifying potential problem areas and areas for further analysis, rather than as generally held industry views.

Some of the matters mentioned which may warrant further analysis were:

1. Gaps in the implementation of DoD policy at the operating level. This was particularly noted in connection with discussions of the Weighted Guidelines profit policy.
2. Concern that DoD, in shifting to higher risk contracting, will not follow through by diminishing controls in the high risk environment. Also, that DoD personnel will not recognize that high risks will result in some high profits as well as some large losses.
3. The high cost of proposal preparation, absorbing much of a company's better technical talent. Such extensive costs are incurred by the unsuccessful bidders, as well as the successful ones.

4. Time delays in consumating contracts.
5. Industry is not being kept advised in a timely fashion of changing requirements so that industry can plan for future work on a reasonably economical basis.
6. Premature price competition of complex items.
7. The tendency of requests for data and adoption of various management systems to force technical and management conformity among contractors.
8. Increasing unallowable-nonrecoverable costs in connection with Contract Definition.
9. The effect on fixed-price negotiations of using overhead rates which reflect unallowable-nonrecoverable costs because the overhead rates were developed for use in cost-type contracts.
10. The DoD policy requiring contractors to invest in facilities and equipment has brought about an increase in capital investment without compensating profit considerations.
11. Competitive advantages which have accrued to some contractors as the result of distribution of government-owned facilities among contractors.
12. The high costs to subcontractors of preparing initial proposals and subsequent proposals, often to competing prime contractors, as the result of resolicitation.

Many of these contractors made observations regarding the conduct of this study. Some of them follow:

1. The FTC-SEC Quarterly Financial Report, as modified, presents the best possible comparative data although it cannot be considered completely comparable. Any specially structured comparative data would probably not be more useful.

2. The planned consolidation of defense financial data is possibly the best possible approach. It must be recognized, however, that we defense contractors come from many industries. Financial data, consequently, will be somewhat different in shipbuilding, aircraft, electronics, motor vehicles, etc., type industries. It might be desirable, eventually, to develop the approach to recognize these different industries.
3. Return on investment data cannot be utilized as a beneficial management tool without the jeopardy of misinterpretation and unsound conclusions. Such data can lead to unsound conclusions when compared, added, or averaged. These data are best utilized on an individual company or division basis, by company management who have an intimate knowledge of the company.
4. The sensitivity of our financial data cannot be over-emphasized. If improperly used or disclosed, it could be most embarrassing.
5. This profit study has been extremely beneficial to us. It has caused us to take a look at ourselves in a way that heretofore had not been the case. We were concerned about the study initially but now are most happy that we elected to participate.



## SECTION VIII

### OBSERVATIONS, CONCLUSIONS AND FUTURE PLANS

#### A. GENERAL

A significant shift in the mix of business performed by defense contractors has taken place over the period covered by this study. About 70% of these companies' business was defense in 1958. Less than half of their business is presently defense. Over 60% of their profits came from defense in 1958. Over 60% of their profits now come from their commercial business. A capital market analysis (see Section VI) indicates that the attractive companies in the eyes of the average stockholder are the mixed, often conglomerate, type organizations. Such companies will have options on where to apply their resources beyond those available to companies performing primarily for defense. Such companies' profits are also less affected by DoD procurement policies and less vulnerable to the shifts in volume and character of Defense hardware acquisition.

As stated in the ASPR, if profit opportunities are not adequate, the best industrial capabilities will be driven away from the defense market. The underlying purpose of this study was to provide visibility over contractors' actual profits, with particular emphasis on profits on firm fixed-price defense contracts, so as to assist DoD top management in their evaluation of the adequacy of defense profits.

Of the various comparative ratios used in this report it is our opinion that the most significant single index is one that measures after-tax profit on total capital investment. (See Chart I-1). It is to this index that we address these general comments.

Industry profits can be looked at from two perspectives. One perspective is to look at profits for a single year and make comparisons among defense profits, the profits on the commercial business of defense contractors, and the profits of a comparable industry segment such as the FTC-SEC sample companies. The second perspective involves examination of profits over a span of years. The two perspectives are inter-related, the one being a vertical and the other a horizontal picture of the same data. Evaluation of profit policies will require analysis from both viewpoints.

When one views profits from the first perspective one finds that in each of the early four years of this study, 1958-61, defense after-tax profits as a per cent of total capital were higher than the commercial profits of these companies and higher than the profits of the FTC-SEC sample companies. In each of the next five years, 1962-66, the reverse was true; i.e., defense profits were lower than both of the other two categories.

The single year pictures become more meaningful when profits are viewed from the other perspective, that is, over time. During the period from 1958 through 1967 commercial profits of defense contractors and profits of the FTC-SEC companies have a strong upward trend. Over the same period defense profits show a decline. When a shorter, but more recent period of time is used for this examination, namely 1962 through 1967, the defense trend is not so obvious--it appears to have flattened. However, over that same shorter span of time the commercial and FTC-SEC profit ratios continued their increase. The effect was a widening of the gap between defense profits and profits in the other two categories.

## B. INEQUITIES IN THE WEIGHTED GUIDELINES METHOD

The method by which DoD profit objectives are computed has resulted in some inequity. The traditional system of establishing profit objectives does not give adequate consideration to differences in contractors' investment opportunities or requirements or to changes in investment requirements over a period of time. Chart I-4 shows the distribution curve of capital turnover of the sample companies. Applying nearly equal profit rates to the costs of all contractors without regard to their different places on the curve, results in a wide disparity among these contractors in return on capital. A restructuring of the Weighted Guidelines method to give greater consideration to contractor investment is considered a needed first step toward correcting a significant portion of this inequity.<sup>1</sup>

## C. INCREASED CAPITAL REQUIREMENTS - PROGRESS PAYMENTS

Capital requirements for contractors have increased more rapidly than their defense sales. Although this reflects in part the DoD emphasis on reducing the amount of facilities furnished to contractors and in part the breakout program, it appears that the major impact was due to the shift from cost reimbursement contracts to fixed-price contracts. During the period June 30, 1965 through June 30, 1967, DoD increased its outstanding progress payments to all contractors by \$3,221 million. This increase was caused by the high volume of procurement during the period which was placed under fixed-price type contracts. Since, under this type of contract, the DoD puts up less than 100% of the contractors'

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<sup>1</sup>A recent LMI report, "Weighted Guideline Changes and Other Proposals for Incentives for Contractor Acquisition of Facilities," recommended restructuring of the guidelines to give greater consideration to contractor investment. (LMI Task 66-12) (Defense Documentation Center No. AD 660388).

costs, contractors must finance the balance. The contractors' share in these costs increased by \$905 million during the same two-year period. Under cost-reimbursement contracts, the DoD would have absorbed virtually 100% of the increase.

LMI made a limited analysis to determine the impact on the high and medium volume companies if DoD progress payments on fixed-price contracts were to be increased from 70% to 90%. Overall, the impact on all these companies on a weighted average basis would be a 10% increase in the rate of profit to total capital investment. However, if the sample companies are separated into those which have profit/TCI ratios under 20% and those which have profit/TCI ratios over 20%, it will be found that the lower profit/TCI companies would benefit most from increased progress payments. The two-thirds of the companies that earn below a 20% rate on TCI would increase their profit/TCI ratio 45% more than the companies above the 20% profit/TCI ration.

The matter of progress payments is being examined in detail by a DIAC working group. The Air Force is developing a mathematical model attempting to depict information dealing with contractors' capital requirements under present customary rates of progress payments versus various possible changes in progress payments. While it is the opinion of LMI that the impact of possible changes in progress payments should be thoroughly explored, it is also the opinion of LMI that the standard rate of progress payments should reflect the substantial change in types of contracts that has taken place over the past several years. Also, any consideration of an increase in progress payments to high and medium volume companies should take into account the desirability of increasing the "flow-down" of progress payments to some subcontractors.

D. UNALLOWABLE/NONRECOVERABLE COSTS

Contractor data show that 40% of the present unallowable and nonrecoverable costs are for disallowed IR&D. DoD has under consideration proposals for revision of the IR&D and Bid & Proposal Cost Principles. A principal feature of the revisions is a policy of control through ceilings negotiated under advance agreements. Contractors would absorb all costs above the ceilings but would not share in costs below ceilings as they have in the past. LMI endorses this policy.

Consideration should be given to modifying the present DoD policy of funding contract definition contracts. The modification should consider permitting costs in excess of reimbursements under contracts for contract definition to be chargeable to contractor overhead (e.g., bid and proposal or IR&D) rather than directly to profit. Contract definition contracts are of the nature of limited expense reimbursements and the overruns are not contract losses in the normal sense of the word.

The difficulties of fully funding contract definition contracts are partially caused by the varying requirements of the participating contractors, and the tendency to fund each contractor equally. The pressure on the contractors to expand the contract definition work in the interest of successful marketing is another factor which makes "full funding" difficult to define. However, it is not unreasonable to expect that DoD can arrive at a fair contract definition estimate for supporting the contractor of average capability. This would force some contractors to spend more than the estimate to bring their capabilities up to the average. Since the average contractors would have attained their state-of-the-art, presumably under their IR&D or B&P programs, the additional costs of other contractors should be considered as comparable IR&D or as

unsolicited bid and proposal expense. Inclusion of such overruns in overhead would place these costs under the normal ceiling controls (IR&D or B&P) which would apply if there were no contract definition contract.

E. FIRM FIXED-PRICE (FFP) CONTRACTS

In discussions, contractors have consistently cited increases in price competition and the greater use of firm fixed-price (FFP) contracting as the factors having the greatest negative impact on defense profit in recent years. The data assembled in this review support these contractors' statements. Contractors also say that the number of bidders is increasing while the contracts are getting larger in size but smaller in number. They have acknowledged cases of poor estimating on their part on fixed-price business, but have stated that in some cases the under pricing was caused by the use of fixed-price contracts for development efforts. Questioning on this point established that of the large number of FFP contracts, there have been a small number of cases of fixed-price contracts on which large losses were incurred. This small number of contracts has had a large negative impact on the profits of the companies involved and on average profits of the sample.

The effect of price competition on defense profits raises complex questions as to the consequences of price competition. These are problems which DoD alone may not be capable of solving. It is already DoD policy to discourage "buying-in" and "cut-throat" competition which could lead to virtual monopoly. Nevertheless, it appears that some loss and low profit contracts are the result of pricing and bidding decisions by competent contractors. Management decisions are not always simple; on the contrary, they are usually complex. The choice of minimum return on one contract may be part of a decision for maximum profit on total business. Although questionable estimates based on lack of information can be

improved through better definitions by both DoD and industry, the responsibility for low profits on competitive procurements rests heavily on the shoulders of the contractors involved. This area is deserving of further study and analysis. However, we believe that there has been so much emphasis on the use of firm fixed-price contracts that this type of contract has sometimes been used injudiciously. Improved criteria should be provided to DoD personnel for the use of firm fixed-price contracting, particularly in regard to the feasibility of reasonable cost estimating. Similarly, defense contractors should be cautioned to give as much attention to their ability to perform at the estimated costs as they give to their competitive desire to obtain a contract.

#### F. FUTURE PLANS

This report consists primarily of a presentation of data which are yet to be analyzed in depth. The distribution of this report will provide the basis for LMI to obtain feedback from DoD, industry, and other organizations and individuals, which will form the basis for better understanding of the data and of the causes of the ratios and trends.

This LMI task provides for updating the report by extending the basic data through 1967. An in-depth analysis by LMI of all phases of the updated study should be the primary part of the future effort. It is also apparent that certain areas are deserving of more intense study.

Some additional breakdown of the data on contractors' capital investment is required for evaluation of proposed changes to profit policies to recognize the impact of portions devoted to facilities apart from those related to working capital.

Further analysis of the data output of the DoD Internal Profit Review System is required. Consideration should be given to obtaining additional data on firm fixed-price negotiated contracts, which will permit better analysis of the application of the Weighted Guidelines to this contract type. An improved segregation of competitive contracts would assist in satisfying this requirement and at the same time lead to better understanding the problems that are believed to have arisen under some of the competitive procurements.